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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/776,041

02/11/2004

John W. Countz

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EXAMINER

SINGH, PREM C

ART UNIT

PAPER NUMBER

1764

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/776,041

Applicant(s)

COUNTZ, JOHN W.

Examiner

Prem C. Singh

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) 1-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 02/11/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-36, drawn to a system of anaerobic reactor and cracking reactor, classified in class 422, subclass 135.
 - II. Claims 37-62, drawn to process of producing hydrocarbons from biomass, classified in class 585, subclass 240.

The inventions are distinct, each from the other because of the following reasons:

Inventions in Group II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process can be practiced by a materially different system for example, fluidized bed reactor.

Because these inventions are independent or distinct for the reasons given above and because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

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2. During a telephone conversation with Attorney Padmanabhan on 01/02/07 a provisional election was made without traverse to prosecute the invention of claims 37-62. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-36 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

3. The disclosure is objected to because of the following informalities:

[Paragraph 024] (Page 6) (Lines 2 and 3): Numeral 10 represents first component (SCADA) as given on page 7 (Lines 1 and 2) and not the second component.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 37-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tarman et al (US Patent 4,289,625).

7. With respect to claim 37, Tarman invention discloses a hybrid bio-thermal gasification process for improved carbonaceous gasification. The process comprises:

(1) Adding biological feed to an anaerobic digester, withdrawing biological residue from the digester (See column 2, lines 10-17);

(2) Introducing into a thermal gasifier producing thermal gasifier products and thermal residue (See column 2, lines 17-21). Tarman further discloses the gasifier conditions as temperature = 1200-1800°F, pressure = atmospheric to 1000 psig, and dwell time = 3-60 minutes) (See column 5, lines 24-25, 35-36, 38-39).

Tarman also discloses, " It is desirable to remove deleterious aromatics or higher hydrocarbons and sulfur-containing compounds from such product gases as shown by liquid recovery means (92) and purification means (94) in figure 2". (Column 5, lines 6-10).

It is to be noted that Tarman is using a temperature range of 1200-1800°F, higher than the claimed range of 350-600°F. Since Tarman is using higher temperature to gasify a substantial portion of the biological residues (See column 5, lines 22-25), it would have been obvious to one skilled in the art at the time the invention was made to modify Tarman invention and operate the reactor at a lower temperature, including in the claimed range, not to gasify substantial portion of the feed and thus to produce more of liquid products and less of gaseous products.

8. With respect to claim 38, although Tarman invention discloses using a pressure from atmospheric to 1000 psig, the invention does not specifically mention a pressure intensifier to control the pressure. It is well known in the art to control pressure in a reactor by standard means like pressure regulators and valves.

9. With respect to claim 39, although Tarman does not specifically mention about softening the organic material, the invention does disclose, "The process comprises adding biological feed to an anaerobic digester and anaerobically digesting the biological feed in an active liquid culture," Clearly the feed is softened during the process.

10. With respect to claims 40-42, and 44, Tarman discloses, "Biological digester (10) may be of any configuration suitable for anaerobic production of methane containing gas and may comprise multiple stage digesters with the supernatant from a

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sedimentation stage being recycled to the biological feed preparation means." (Column 4, lines 38-41). Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Tarman invention and configure the reactor to isolate a portion from reactive shocks.

It would also have been obvious to configure the reactor to include a meta-stable area, a first and second buffer zones to separate the highly reactive, moderately reactive, and less reactive areas.

It would also have been obvious to divide the reactor into three compartments as claimed, for proper control of digester operation.

11. With respect to claims 43 and 45, Tarman discloses, "Liquids and nutrients may be derived from dewatering of biological residue of the anaerobic digester and recycled to the digester." (Column 4, lines 22-25).

12. With respect to claims 46 and 48, Tarman discloses, "Methane-producing anaerobic systems utilizing acid forming bacteria and methane-producing organisms as well known to be employed to produce methane from sewage sludge can be employed in practice of the present invention." (Column 3, lines 63-68).

13. With respect to claim 47, Tarman discloses in Example V (Columns 7 and 8, lines 40-68) that a biological feed of Bermuda grass is digested in the anaerobic

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digester, the residue is dewatered and fed to a two-stage thermal gasifier. Thus, the feed from the digester is sufficient for one batch operation of the gasifier.

14. With respect to claim 49, Tarman discloses, "It is desirable to remove deleterious sulfur-containing compounds from such product gases as shown by liquid recovery means (92) and purification means (94) in figure 2 and purification means (40) in figure 3." (Column 3, lines 6-11).

15. With respect to claims 50-52, and 56, Tarman discloses, "Product methane containing gas, from biological digester (10), principally methane and carbon dioxide, may be used directly as medium BTU fuel gas as shown in figure 3 or may be purified and upgraded by methods known to the art to provide SNG." (Column 4, lines 65-68; column 5, lines 1-2).

Although Tarman does not specifically mention about using a pump for extracting the gas and does not mention that the gas can be used to power the thermobaric chamber but it would have been obvious to one skilled in the art at the time the invention was made to modify Tarman invention and use a pump to extract the gas and utilize the gas to power the gasifier (30) to make use of the gas in-situ and make the process more economical.

16. With respect to claims 53-55, Tarman discloses, "Suitable purification and carbon dioxide and sulfur recovery processes include acid gas removal processes as described

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in Gas Purification, Arthur Kohl, and Fred Riesenfeld, Second edition (1974)". (Column 5, lines 56-60).

Tarman does not specifically mention using a scavenge pump to remove sulfur and also does not use iron sponge to remove sulfur.

Since the sulfur recovery unit (94) disclosed by Tarman must have an effective device to remove sulfur, it would have been obvious to one skilled in the art at the time the invention was made to modify Tarman invention and use a scavenge pump because any effective device can be used. Also, it would have been obvious to use iron sponge for sulfur removal because any standard method for sulfur removal can be used. See *In Re Fout*, 675 F.2d 297, 213 USPQ 532 (CCPA 1982).

17. With respect to claims 57 and 58, Tarman discloses, "It is desirable to remove deleterious aromatics or higher hydrocarbons from such product gases as shown by liquid recovery means (92) and purification means (94) in figure 2 and purification means (40) in figure 3." (Column 3, lines 6-11).

Although Tarman does not specifically mention about separation of plurality of products, it would have been obvious to one skilled in the art at the time the invention was made to modify Tarman invention and include a step of separation of different products and make the process more profitable.

18. With respect to claims 59 and 60, Tarman does not disclose selectively combining the plurality of products.

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Since Tarman is separating higher hydrocarbons and aromatics from the liquid recovery and oil-water separation unit (92), it would have been obvious to one skilled in the art at the time the invention was made to modify Tarman invention, further purify the products, and selectively combine different products of similar characteristics for use as fuel.

19. With respect to claim 61, Tarman does not disclose a hydrocarbon distribution, interfusion, and storage process.

Since hydrocarbon distribution, interfusion and storage processes are well established in the refining operation, it would have been obvious to one skilled in the art at the time the invention was made to modify Tarman invention and as discussed under claims 59 and 60, selectively combine, distribute, or store the blended fuel.

20. With respect to claim 62, Tarman discloses the product gases by using sewage sludge and Bermuda grass as two different feeds and using two different sets of temperature and pressure in the gasifier (See column 6, lines 9-68; columns 7 and 8, lines 1-68; column 9, lines 1-68; and column 10, lines 1-38).

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Trost, US Patent 5,651,890.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prem C. Singh whose telephone number is 571-272-6381. The examiner can normally be reached on MF 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PC/010907



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